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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/608,187

06/30/2003

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EXAMINER

PIZIALI, JEFFREY J

ART UNIT

PAPER NUMBER

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/12/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/608,187

Applicant(s)

BAEK ET AL.

Examiner

Jeff Piziali

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,7,8,13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6 and 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed (on 14 September 2006) in this application after final rejection (mailed 16 May 2006). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 14 September 2006 has been entered.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 1 and 9 each separately recite the limitation "so as to improve response characteristics of the ferroelectric liquid crystal" in the final two lines. There is insufficient antecedent basis for this limitation in the claim. In particular, there is no earlier discussion of any "response characteristics" in the pending claim language. Therefore, one having ordinary skill in the art would be unable to determine what basis or foundation the "response characteristics of the ferroelectric liquid crystal" are supposed to be "*improved*" from.

6. Claims 2, 3, 6, and 10-12 are rejected under 35 U.S.C. 112, second paragraph, as simply being dependent upon a rejected base claim.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Elected claims 1-3, 6, and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al (US 4,842,371 A) in view of Saishu et al (US 5,949,391 A).

Regarding claim 1, Yasuda discloses an electric field alignment method of a twisted nematic liquid crystal display device (see Column 22, Lines 17-21), comprising: connecting a plurality of thin film transistors [Fig. 1; T<sub>11</sub>-T<sub>44</sub>] arranged along a first direction to a plurality of data lines [Fig. 1; S<sub>1</sub>-S<sub>8</sub>] in an offset configuration between adjacent data lines (see Column 6, Line 54 - Column 7, Line 40); supplying a turn-ON voltage [Fig. 4; b & c] at a level greater than

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a threshold voltage of the thin film transistors during an electric field alignment of liquid crystal material of the liquid crystal display device at least more than two successive times to a plurality of gate lines [Fig. 1;  $G_1$  &  $G_2$ ] arranged along a second direction; and supplying voltages [Fig. 4; d] of opposite polarity to the adjacent data lines during the electric field alignment while maintaining a voltage [Fig. 4; e-j] of a liquid crystal cell of the liquid crystal display device during the electric field alignment (see Column 8, Line 67 - Column 9, Line 49); wherein an electric field [Fig. 4; e-j] is applied to the ferroelectric liquid cell [Fig. 1; 2 & 3] by using a leakage current of the thin film transistors [Fig. 1;  $T_{11}$ - $T_{44}$ ] so as to improve response characteristics of the ferroelectric liquid crystal device (see Column 12, Lines 42-56). Yasuda does not expressly disclose the twisted nematic liquid crystal display could also be a ferroelectric liquid crystal display.

However, Saishu does disclose using ferroelectric liquid crystal in place of twisted nematic liquid crystal (see Column 1, Lines 20-32). Yasuda and Saishu are analogous art, because they are from the shared field of driving thin film transistors in an offset configuration for liquid crystal display devices. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to replace Yasuda's twisted nematic liquid crystal with Saishu's ferroelectric liquid crystal, so as to improve display response speed and viewing angle.

Regarding claim 2, Yasuda discloses the liquid crystal cell operates in a Half V-Switching Mode (see Fig. 13; Column 15, Lines 3-12).

Regarding claim 3, Yasuda discloses supplying the turn-ON voltage to the gate lines is performed at least between ten to four-hundred times to the gate lines (see Fig. 10; Column 11, Lines 54-62).

Regarding claim 6, Yasuda discloses supplying the voltage below the threshold voltage of the thin film transistors to the gate lines includes supplying a voltage between 0-1 V to the gate lines during the electric field alignment (see Fig. 4; Column 8, Line 67 - Column 9, Line 49).

Regarding claim 9, this claim is rejected by the reasoning applied in rejecting claim 1; furthermore, Yasuda discloses a gate driving circuit [Fig. 1; G<sub>1</sub> & G<sub>2</sub>] and a data driving circuit [Fig. 1; 111 & 112] (see Column 6, Line 54 - Column 7, Line 40).

Regarding claim 10, this claim is rejected by the reasoning applied in rejecting claim 2.

Regarding claim 11, this claim is rejected by the reasoning applied in rejecting claim 3.

Regarding claim 12, Yasuda discloses the data driving circuit supplies video data [Fig. 4; d] having different polarities to the adjacent data lines during driving of the display device (see Column 8, Line 67 - Column 9, Line 49).

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Response to Arguments***

10. Applicants' arguments filed 14 September 2006 have been fully considered but they are not persuasive. The applicants contend that the cited and combined prior art of Yasuda et al (US 4,842,371 A) in view of Saishu et al (US 5,949,391 A), "are completely silent about applying an electric field to the ferroelectric liquid cell by using a leakage current of the thin film transistors so as to improve response characteristics of the ferroelectric liquid crystal device" (see Page 9, Paragraph 3 of the reply filed 14 September 2006). However, the examiner respectfully disagrees.

Yasuda discloses an electric field alignment method of a twisted nematic (TN) liquid crystal display device (see Column 22, Lines 17-21). Yasuda does not expressly disclose the twisted nematic (TN) liquid crystal display could also be a ferroelectric liquid crystal (FLC) display. However, Saishu clearly does disclose using ferroelectric liquid crystal (FLC) in place of twisted nematic (TN) liquid crystal (see Column 1, Lines 20-32). Yasuda and Saishu are analogous art, because they are from the shared field of driving thin film transistors in an offset configuration for liquid crystal display devices. Therefore, it would have been obvious to one of

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ordinary skill in the art at the time of invention to replace Yasuda's twisted nematic liquid crystal with Saishu's ferroelectric liquid crystal, so as to improve display response speed and viewing angle.

Furthermore, Yasuda states, "a spectrum of an average light response of a liquid crystal panel will become half the field frequency, that is, 30 Hz and, accordingly, not only will any possible reduction of the resolution be avoided, but also no use of the memory of relatively large memory capacity and the high speed clock frequency is required. Therefore, a picture with no flicker can be reproduced" (see Column 12, Lines 49-56). As such, Yasuda discloses an electric field [Fig. 4; e-j] is applied to the ferroelectric liquid cell [Fig. 1; 2 & 3] by using a leakage current (wherein leakage current is unavoidable and inherent in practice) of the thin film transistors [Fig. 1; T<sub>11</sub>-T<sub>44</sub>] so as to improve response characteristics of the ferroelectric liquid crystal device (see Column 12, Lines 42-56), as instantly claimed.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali  
8 January 2007